

START

ENCLOSURE 3

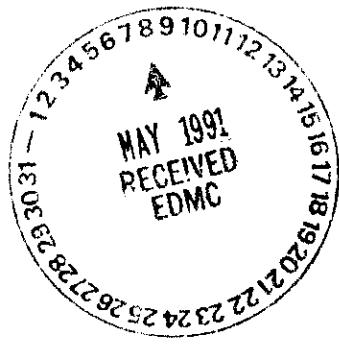
PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

RECEIVED

APR 27 1990

REGULATORY COMPLIANCE

Analytical Report



PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

April 26, 1990

Steven Lockhaven
Advanced Nuclear Fuels Corp.
2101 Horn Rapids Road
Richland WA 99352

NARRATIVE FOR PNEL 2372 *Submission from Pacific Northwest Environmental Laboratory*

Enclosed are data summary sheets and supporting documentation for the eighteen samples received on April 11, 1990. The field identification numbers, corresponding lab identification numbers, and dates collected are listed below.

<u>FIELD ID</u>	<u>LAB ID</u>	<u>DATE COLLECTED</u>
1A	2372-01	04-11-90
1B	2372-02	04-11-90
2A	2372-03	04-11-90
2B	2372-04	04-11-90
9A	2372-05	04-11-90
13A	2372-06	04-11-90
14A	2372-07	04-11-90
15A	2372-08	04-11-90
16A	2372-09	04-11-90
9B	2372-10	04-11-90
13B	2372-11	04-11-90
14B	2372-12	04-11-90
15B	2372-13	04-11-90
16B	2372-14	04-11-90
Trip Blank 1	2372-15	04-11-90
15B	2372-16	04-11-90
9B	2372-17	04-11-90
Trip Blank 2	2372-18	04-11-90

Listed below are anomalies and narratives associated with the receipt and/or analysis of these samples.

SAMPLE RECEIVING

The samples 15B, 9B, and Trip Blank (2372-16, 17, and 18 respectively) were received at 10 degrees C upon sample arrival. Also, the Trip Blank (2372-18) had an airbubble in two of two vials. The samples are to be processed as originally requested using the vial with the smallest airbubble for analysis of the Trip Blank.

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

Steven Lockhaven
Advanced Nuclear Fuels Corp.
April 26, 1990
Page 2

One of two voa vials for sample 9B (2372-10) had a broken lid upon sample receipt. The vial with the lid intact was to be used for analysis.

The samples 1B, 13B, and 14B for volatile analysis (2372-02, 11, 12 respectively) contained an air bubble in one of two voa vials. The vial without the airbubble was to be used for analysis.

Samples 14A and the Trip Blank (2372-07 and 15 respectively) contained an airbubble in two of two voa vials. The samples are to be analyzed as originally requested, using the vial with the smallest airbubble.

The chain of custody forms for these samples were not relinquished by the originator with a signature. The samples were processed as originally requested.

The above anomalies have been verbally reported to Steve Lockhaven upon sample receipt at PNEL. The corrective actions are as per Steve Lockhaven of Advanced Nuclear Fuels, Inc.

VOA 601

No anomalies were detected with this batch.

All samples except 2372-18 and 2372-06 required dilution.

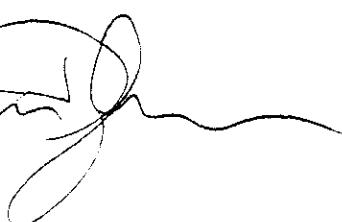
VOA CLP

No anomalies were reported for this case.

BNA

No problems were encountered during the extraction and analysis of these samples and their associated QC.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or designee, as verified by the following signature.

Sincerely,

\NAR-0310.372
Enclosures

**PACIFIC NORTHWEST
ENVIRONMENTAL
LABORATORY**

METHOD REFERENCE

Chlorinated Volatiles Method 8010, Test Methods for Evaluating Solid Waste,
 United States Environmental Protection Agency, SW-846,
 3rd Ed., 1986.

**Analytical Methods for
Volatile** Environmental Protection Agency, Contract Laboratory
Program, Organic Statement of Work, Exhibit-D, February
 1988.

**Gas Chromatograph/Mass
Spectrometry for Semi-
Volatile Organics:
Capillary Column
Technique** Method 8270, Test Methods for Evaluating Solid Waste,
 United States Environmental Protection Agency, SW-846,
 3rd Ed., 1986.

**PACIFIC NORTHWEST
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DATA REPORTING QUALIFIERS

Some of these qualifiers may appear in this analytical data report. Soil samples are analyzed and reported on a dry weight basis unless otherwise noted.

ORGANICS QUALIFIERS

- A - This flag indicates that a TIC is a suspected aldol-condensation product.
- B - Indicates compound was found in the associated blank as well as in the sample.
- C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.
- D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.
- E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.
- J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a target compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.
- M - Indicates value is taken from a medium level analysis.
- ND- Not detected. Detection limit shown in parentheses.
- NQ- Not quantitated as...
- U - Indicates compound was analyzed for but not detected at the given detection limit. The sample quantitation limit was corrected for dilution and for percent moisture, when applicable.
- X - Other specific flags and footnotes may be required to properly define the results. If more than two qualifiers are required for a sample result, the "X" flag combines several flags, as needed. For instance, the "X" flag might combine the "A," "B," and "D" flags for some sample.
- * - Indicates spiked compounds used for MS/MSD analysis.

INORGANICS QUALIFIERS

- NA- Relative percent difference calculation is not applicable to analytes when not detected.
- NC- Not calculated when analyte is not detected.
- NS- Not calculated when sample concentration of analyte exceeds spike level by a factor of four or more.
- U - Indicates that analyte was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

INORGANICS METHOD QUALIFIERS

- CV- Manual Cold Vapor AA
- F - FURNACE AA
- P - ICP

**PACIFIC NORTHWEST
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Client Number: 63-900310

VOLATILE ORGANICS ANALYSIS

Client Sample ID.	Blank	1A	1B	2A
PNEL Sample ID.	2372-MB	2372-01	2372-02	2372-03
Matrix	Water	Water	Water	Water
Date Received	NA	04-12-90	04-12-90	04-12-90
Date Analyzed	04-23-90	04-23-90	04-23-90	04-23-90
Units	ug/L	ug/L	ug/L	ug/L

Compound

1,1,1-Trichloroethane	ND(0.5)	7.2	7.6	ND(5.0)
Carbon tetrachloride	ND(0.5)	ND(5.0)	ND(5.0)	ND(5.0)
Trichloroethylene	ND(0.5)	40	40	56

Surrogate

% Bromochloromethane	101	93	94	98
% 4-Bromofluorobenzene	118	113	112	115

**PACIFIC NORTHWEST
ENVIRONMENTAL
LABORATORY**

Client Number: 63-900310

VOLATILE ORGANICS ANALYSIS

Client Sample ID.	Blank	2B	9A	13A
PNEL Sample ID.	2372-MB	2372-04	2372-05	2372-06
Matrix	Water	Water	Water	Water
Date Received	NA	04-12-90	04-12-90	04-12-90
Date Analyzed	04-23-90	04-23-90	04-23-90	04-23-90
Units	ug/L	ug/L	ug/L	ug/L

Compound

1,1,1-Trichloroethane	ND(0.5)	ND(5.0)	ND(5.0)	ND(0.5)
Carbon tetrachloride	ND(0.5)	ND(5.0)	ND(5.0)	ND(0.5)
Trichloroethylene	ND(0.5)	59	22	ND(0.5)

Surrogate

% Bromochloromethane	101	90	90	89
% 4-Bromofluorobenzene	118	116	116	98

**PACIFIC NORTHWEST
ENVIRONMENTAL
LABORATORY**

Client Number: 63-900310

VOLATILE ORGANICS ANALYSIS

Client Sample ID.	Blank	14A	15A	16A
PNEL Sample ID.	2372-MB	2372-07	2372-08	2372-09
Matrix	Water	Water	Water	Water
Date Received	NA	04-12-90	04-12-90	04-12-90
Date Analyzed	04-23-90	04-23-90	04-23-90	04-23-90
Units	ug/L	ug/L	ug/L	ug/L

Compound

1,1,1-Trichloroethane	ND(0.5)	8.6	6.8	ND(5.0)
Carbon tetrachloride	ND(0.5)	ND(5.0)	ND(5.0)	ND(5.0)
Trichloroethylene	ND(0.5)	33	72	30

Surrogate

% Bromochloromethane	101	91	93	95
% 4-Bromofluorobenzene	118	102	108	103

**PACIFIC NORTHWEST
ENVIRONMENTAL
LABORATORY**

Client Number: 63-900310

VOLATILE ORGANICS ANALYSIS

Client Sample ID.	Blank	Trip Blank
PNEL Sample ID.	2372-MB	2372-18
Matrix	Water	Water
Date Received	NA	04-12-90
Date Analyzed	04-23-90	04-23-90
Units	ug/L	ug/L

Compound

1,1,1-Trichloroethane	ND(0.5)	ND(0.5)
Carbon tetrachloride	ND(0.5)	ND(0.5)
Trichloroethylene	ND(0.5)	ND(0.5)

Surrogate

% Bromochloromethane	101	99
% 4-Bromofluorobenzene	118	118

PACIFIC NORTHWEST
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VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

PNEL Sample ID.:	2379-01	Client No.:	NA
Client Sample ID.:	NA	Sample Matrix:	Water
Date Sample Received:	NA	Date Sample Analyzed:	04-22-90

<u>Compound</u>	<u>SPIKE ADDED (ug/L)</u>	<u>SAMPLE CONC. (ug/L)</u>	<u>MS CONC. (ug/L)</u>	<u>MS % REC[#]</u>	<u>QC LIMITS REC</u>
1,1-Dichloroethene	20.0	ND	18.8	94	61-145
Trichloroethene	20.0	ND	21.3	106	71-120
Benzene	20.0	ND	18.2	91	76-127
Toluene	20.0	ND	18.7	94	76-125
Chlorobenzene	20.0	ND	25.8	129	75-130

<u>Compound</u>	<u>SPIKE ADDED (ug/L)</u>	<u>MSD CONC. (ug/L)</u>	<u>MSD % REC[#]</u>	<u>% RPD[*]</u>	<u>QC LIMITS RPD</u>	<u>REC</u>
1,1-Dichloroethene	20.0	18.1	90	4.3	14	61-145
Trichloroethene	20.0	20.7	104	1.9	14	71-120
Benzene	20.0	17.7	88	3.4	11	76-127
Toluene	20.0	17.8	89	5.5	13	76-125
Chlorobenzene	20.0	25.2	126	2.4	13	75-130

Column to be used to flag recovery and RPD (Relative % Difference) values with an asterisk.

* Values outside of QC limits

RPD: 0 out of 5 outside limits
Spike Recovery: 0 out of 10 outside limits

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY REPORT

Matrix Spike - LAB Sample No.: 2357-04

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS %	QC LIMITS	REC #	REC.
1,1-Dichloroethene	2500	0	2500	100	161-1451		
Trichloroethene	2500	620	3100	99	171-1201		
Benzene	2500	0	2500	100	176-1271		
Toluene	2500	0	2500	100	176-1251		
Chlorobenzene	2500	0	2500	100	175-1301		

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD %	%	QC LIMITS	REC #	RPD #	RPD	REC.
1,1-Dichloroethene	2500	2500	100	0	14	161-1451			
Trichloroethene	2500	3100	99	0	14	171-1201			
Benzene	2500	2500	100	0	11	176-1271			
Toluene	2500	2400	96	4	13	176-1251			
Chlorobenzene	2500	2500	100	0	13	175-1301			

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of qc limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

COMMENTS: _____

PACIFIC NORTHWEST ENVIRONMENTAL LABORATORY

WATER VOLATILE SURROGATE RECOVERY REPORT

	LAB	S1	S2	S3	TOT
	SAMPLE NO.	(TOL) #	(BFB) #	(DCE) #	OUT
01	VBLKA1	103	101	96	0
02	2372-10	99	97	91	0
03	2372-11	104	101	97	0
04	2372-12	98	102	96	0
05	2372-13	101	99	99	0
06	2372-14	100	98	98	0
07	2372-10DL	103	97	101	0
08	2372-15	100	98	97	0
09					
10					
11					
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QC LIMITS

S1 (TOL) = Toluene-d8 (88-110)
 S2 (BFB) = Bromofluorobenzene (86-115)
 S3 (DCE) = 1,2-Dichloroethane-d4 (76-114)

Column to be used to flag recovery values

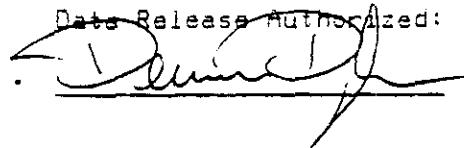
D Surrogates diluted out

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VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: VBLKAI
 Sample Matrix: WATER
 Concentration: LOW
 Sample Volume: 5.0mL
 Percent Moisture: NA
 Date Extracted: NA
 Date Analyzed: 4/12/90
 Instrument ID: VOA #1

Customer Sample No: NA
 Sample Description: METHOD BLANK
 Date Collected: NA
 Time Collected: NA
 Date Received: NA
 Date Release Authorized:



C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
57-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
107-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
120-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
133-02-7	Xylene (isotai)	5	U

* See footnote page for data qualifiers (Q)

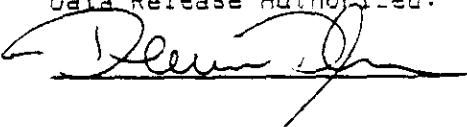
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Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-10
 Sample Matrix: WATER
 Concentration: LOW
 Sample Volume: 5.0ML
 Percent Moisture: NA
 Date Extracted: NA
 Date Analyzed: 4/12/90
 Instrument ID: VOA #1

Customer Sample No: 9B
 Sample Description: TEST WELL #9
 Date Collected: 4/11/90
 Time Collected: 12:35
 Date Received: 4/12/90
 Data Release Authorized:



C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	Q
74-83-9	Bromomethane	10	Q
75-01-4	Vinyl Chloride	10	Q
75-00-3	Chloroethane	10	Q
75-03-2	Methylene Chloride	5	Q
67-64-1	Acetone	300	Q
75-15-0	Carbon Disulfide	5	Q
75-35-4	1,1-Dichloroethene	5	Q
75-34-3	1,1-Dichloroethane	5	Q
540-59-0	1,2-Dichloroethene (total)	5	Q
67-66-3	Chloroform	5	Q
107-06-2	1,2-Dichloroethane	5	Q
78-93-3	2-Butanone	10	Q
71-55-8	1,1,1-Trichloroethane	10	Q
56-23-5	Carbon Tetrachloride	5	Q
108-05-4	Vinyl Acetate	10	Q
75-27-4	Bromodichloromethane	5	Q
78-87-5	1,2-Dichloropropane	5	Q
10061-01-5	cis-1,3-Dichloropropene	5	Q
79-01-6	Trichloroethene	5	Q
124-48-1	Dibromochloromethane	5	Q
79-00-5	1,1,2-Trichloroethane	5	Q
71-43-2	Benzene	5	Q
10061-02-6	trans-1,3-Dichloropropene	5	Q
75-25-2	Bromoform	5	Q
108-10-1	4-Methyl-2-Pentanone	10	Q
591-79-8	2-Hexanone	10	Q
127-18-4	Tetrachloroethene	5	Q
79-34-5	1,1,2,2-Tetrachloroethane	5	Q
108-88-3	Toluene	5	Q
108-90-7	Chlorobenzene	5	Q
100-41-4	Ethylbenzene	5	Q
100-42-5	Styrene	5	Q
133-01-7	Xylene (total)	5	Q

* See footnote page for data qualifiers (Q)

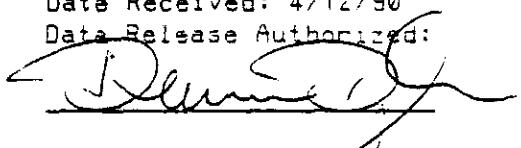
FA4227

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-11
 Sample Matrix: WATER
 Concentration: LOW
 Sample Volume: 5.0mL
 Percent Moisture: NA
 Date Extracted: NA
 Date Analyzed: 4/12/90
 Instrument ID: VOA #1

Customer Sample No: 138
 Sample Description: TEST WELL #13
 Date Collected: 4/11/90
 Time Collected: 13:52
 Date Received: 4/12/90
 Data Release Authorized:



C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-83-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-79-6	2-Hexanone	10	U
127-16-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-30-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
103-02-7	Xylene (total)	5	U

* See footnote page for data qualifiers (Q)

<FA4226>

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-12
 Sample Matrix: WATER
 Concentration: LOW
 Sample Volume: 5.0mL
 Percent Moisture: NA
 Date Extracted: NA
 Date Analyzed: 4/12/90
 Instrument ID: VOA #1

Customer Sample No: 148
 Sample Description: TEST WELL #14
 Date Collected: 4/11/90
 Time Collected: 11:55
 Date Received: 4/12/90
 Data Release Authorized:

C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-8	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	Z-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-13-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	30	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
531-73-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-80-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
133-02-7	Xylene (total)	5	U

* See footnote page for data qualifiers (Q)

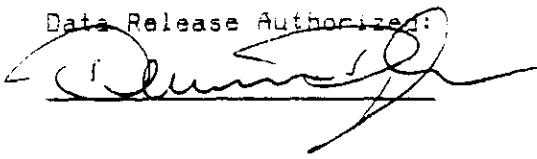
P44229

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-13
 Sample Matrix: WATER
 Concentration: LOW
 Sample Volume: 5.0mL
 Percent Moisture: NA
 Date Extracted: NA
 Date Analyzed: 4/12/90
 Instrument ID: VOA #1

Customer Sample No: 15B
 Sample Description: TEST WELL #15
 Date Collected: 4/11/90
 Time Collected: 12:15
 Date Received: 4/12/90
 Data Release Authorized:



C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropane	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
78-01-6	Trichloroethene	76	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
78-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-80-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
133-02-7	Xylylene (total)	5	U

* See footnote page for data qualifiers (Q)

FA4230

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-14
 Sample Matrix: WATER
 Concentration: LOW
 Sample Volume: 5.0mL
 Percent Moisture: NA
 Date Extracted: NA
 Date Analyzed: 4/12/90
 Instrument ID: VOA #1

Customer Sample No: 168
 Sample Description: TEST WELL #16
 Date Collected: 4/11/90
 Time Collected: 12:23
 Date Received: 4/12/90
 Data Release Authorized:

C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chlroethane	10	U
75-09-2	Methylene Chloride	5	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	5	U
57-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
76-93-3	2-Butanone	10	U
71-55-8	1,1,1-Trichloroethane	5	U
56-23-5	Carbon Tetrachloride	5	U
108-05-4	Vinyl Acetate	10	U
75-27-4	Bromodichloromethane	5	U
78-87-5	1,2-Dichloropropene	5	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	73	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	5	U
10061-02-6	trans-1,3-Dichloropropene	5	U
75-25-2	Bromoform	5	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	5	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	5	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	5	U
133-02-7	Cylene (total)	5	U

* See footnote page for data qualifiers (Q)

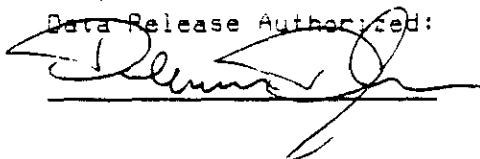
PFA4231

Pacific Northwest Environmental Laboratory

VOLATILE ORGANICS ANALYSIS DATA SHEET
(GC/MS PURGE AND TRAP)

Lab Sample ID: 2372-15
 Sample Matrix: WATER
 Concentration: LOW
 Sample Volume: 5.0mL
 Percent Moisture: NA
 Date Extracted: NA
 Date Analyzed: 4/12/90
 Instrument ID: VOA #1

Customer Sample No: TRIP BLANK
 Sample Description: TRIP BLANK
 Date Collected: 4/02/90
 Time Collected: NA
 Date Received: 4/12/90
 Data Release Authorized:



C.A.S. Number	Compound	ug/L	Q
74-87-3	Chloromethane	10	0
74-83-9	Bromomethane	10	0
75-01-4	Vinyl Chloride	10	0
75-00-3	Chloroethane	10	0
75-09-2	Methylene Chloride	5	0
67-64-1	Acetone	10	0
76-15-0	Carbon Disulfide	5	0
75-35-4	1,1-Dichloroethene	5	0
76-34-3	1,1-Dichloroethane	5	0
540-59-0	1,2-Dichloroethene (total)	5	0
67-66-3	Chloroform	5	0
107-06-2	1,2-Dichloroethane	5	0
78-93-3	2-Butanone	10	0
71-55-6	1,1,1-Trichloroethane	5	0
56-23-5	Carbon Tetrachloride	5	0
108-05-4	Vinyl Acetate	10	0
75-27-4	Bromodichloromethane	5	0
78-87-5	1,2-Dichloropropane	5	0
10061-01-5	cis-1,3-Dichloropropene	5	0
78-01-6	Trichloroethene	5	0
124-48-1	Dibromochloromethane	5	0
78-00-5	1,1,2-Trichloroethane	5	0
71-43-2	Benzene	5	0
10061-02-6	trans-1,3-Dichloropropene	5	0
75-25-2	Bromoform	5	0
108-10-1	4-Methyl-2-Pentanone	10	0
591-78-5	2-Hexanone	5	0
127-18-4	Tetrachloroethene	5	0
78-34-5	1,1,2,2-Tetrachloroethane	5	0
108-86-3	Toluene	5	0
108-90-7	Chlorobenzene	5	0
100-41-4	Ethylbenzene	5	0
100-42-6	Styrene	5	0
133-01-7	Xylylene (total)	5	0

* See footnote page for data qualifiers (Q)

FA4233

2C
WATER SEMIVOLATILE SURROGATE RECOVERY

Lab Name: Pacific Northwest Environmental Laboratory

	LAB	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	OTHER	TOT	OUT
	SAMPLE NO.									
01	2372-MB	59	66	87	67	56	68		0	
02	2372-16	93	95	95	66	58	90		0	
03	2372-17	68	80	88	65	57	66		0	
04	2372-17MS	58	67	87	49	43	60		0	
05	2372-17MSD	67	72	75	58	48	75		0	
06										
07										
08										
09										
10										
11										
12										
13										
14										
15										
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21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

QC LIMITS

S1 (NBZ) = Nitrobenzene-d5	(35-114)
S2 (FBP) = 2-Fluorobiphenyl	(43-116)
S3 (TPH) = Terphenyl-d14	(33-141)
S4 (PHL) = Phenol-d5	(10-94)
S5 (2FP) = 2-Fluorophenol	(21-100)
S6 (TBP) = 2,4,6-Tribromopheno1	(10-123)

Column to be used to flag recovery values

* Values outside of contract required QC limits

NA Surrogates not analyzed for

3C
WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Pacific Northwest Environmental Laboratory

Matrix Spike - Sample No.: 2372-17

Batch No.: BW-08

COMPOUND	SPIKE	SAMPLE	MS	MS	QC
	ADDED (ug/L)	CONCENTRATION (ug/L)	CONCENTRATION (ug/L)	% REC #	LIMITS REC.
Phenol	200	0	110	55	112- 89
2-Chlorophenol	200	0	88.9	44	127-123
1,4-Dichlorobenzene	100	0	47.9	48	136- 97
N-Nitroso-di-n-prop.(1)	100	0	46.2	46	141-116
1,2,4-Trichlorobenzene	100	0	56.6	57	139- 98
4-Chloro-3-methylphenol	200	0	80.5	40	123- 97
Acenaphthene	100	0	57.0	57	146-118
4-Nitrophenol	200	0	27.0	14	110- 80
2,4-Dinitrotoluene	100	0	38.4	38	124- 96
Pentachlorophenol	200	0	233	116*	19-103
Pyrene	100	0	71.3	71	126-127

COMPOUND	SPIKE	MSD	MSD	%	%	QC	LIMITS
	ADDED (ug/L)	CONCENTRATION (ug/L)	REC #	RPD #	RPD	REC.	
Phenol	200	131.0	66	18	42	112- 89	
2-Chlorophenol	200	109	54	20	40	127-123	
1,4-Dichlorobenzene	100	58.9	59	21	28	136- 97	
N-Nitroso-di-n-prop.(1)	100	58.1	58	23	38	141-116	
1,2,4-Trichlorobenzene	100	66.8	67	16	28	139- 98	
4-Chloro-3-methylphenol	200	122	61	42	42	123- 97	
Acenaphthene	100	66.7	33	53*	31	146-118	
4-Nitrophenol	200	39.9	20	35	50	110- 80	
2,4-Dinitrotoluene	100	48.7	49	25	38	124- 96	
Pentachlorophenol	200	349	174*	40	50	19-103	
Pyrene	100	62.6	63	12	31	126-127	

(1) N-Nitroso-di-n-propylamine

Column to be used to flag recovery and RPD values with an asterisk
 * Values outside of QC limits

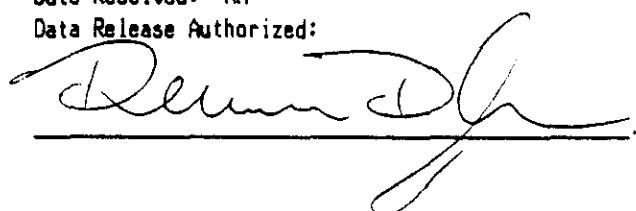
RPD: 1 out of 11 outside limits

Spike Recovery: 2 out of 22 outside limits

SEMI VOLATILE
ORGANICS ANALYSIS DATA SHEET

Laboratory Name: Pacific Northwest Environmental Lab.
Project Number: 63-900310-109
Sample Matrix: Water
Concentration: Low Dilution Factor: 1
Sample wt/vol: 1000 mL
Date Extracted: 4/17/90
Date Analyzed: 4/25/90

Lab Sample: 2372-MB
Customer Sample: Method Blank
Sample Description: Method Blank
Date Collected: NA
Time Collected: NA
Date Received: NA
Data Release Authorized:

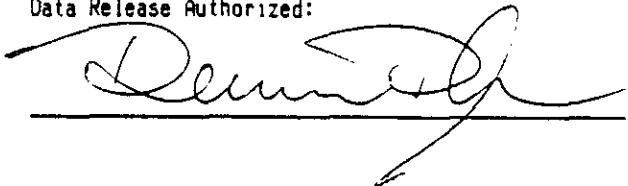


C.A.S. Number	ug/L
112-40-3 n-Dodecane	10 U
126-73-8 Tributyl Phosphate	10 U

SEMI VOLATILE
ORGANICS ANALYSIS DATA SHEET

Laboratory Name: Pacific Northwest Environmental Lab.
Project Number: 63-900310-109
Sample Matrix: Water
Concentration: Low Dilution Factor: 1
Sample wt/vol: 1000 mL
Date Extracted: 4/17/90
Date Analyzed: 4/25/90

Lab Sample: 2372-16
Customer Sample: 15B
Sample Description: Test Well #15
Date Collected: 4/11/90
Time Collected: 12:10
Date Received: 4/12/90
Data Release Authorized:

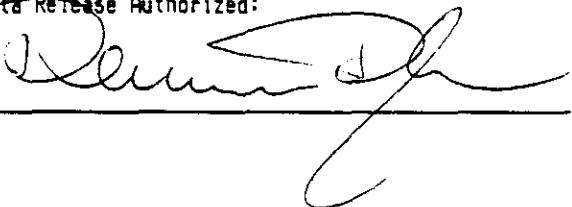


C.A.S. Number	ug/L
112-40-3 n-Dodecane	10 U
126-73-8 Tributyl Phosphate	10 U

SEMI VOLATILE
ORGANICS ANALYSIS DATA SHEET

Laboratory Name: Pacific Northwest Environmental Lab.
Project Number: 63-900310-109
Sample Matrix: Water
Concentration: Low Dilution Factor: 1
Sample wt/vol: 1000 mL
Date Extracted: 4/17/90
Date Analyzed: 4/25/90

Lab Sample: 2372-17
Customer Sample: 98
Sample Description: Test Well #9
Date Collected: 4/11/90
Time Collected: 12:35
Date Received: 4/12/90
Data Release Authorized:

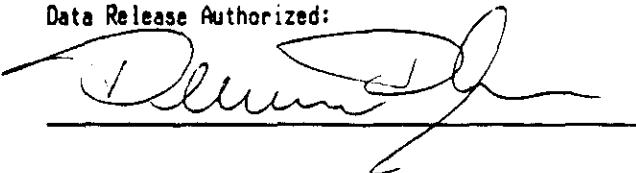


C.A.S. Number	ug/L
112-40-3 n-Dodecane	10 U
126-73-8 Tributyl Phosphate	15

SEMI VOLATILE
ORGANICS ANALYSIS DATA SHEET

Laboratory Name: Pacific Northwest Environmental Lab.
Project Number: 63-900310-109
Sample Matrix: Water
Concentration: Low Dilution Factor: 1
Sample wt/vol: 500 mL
Date Extracted: 4/17/90
Date Analyzed: 4/25/90

Lab Sample: 2372-17MS
Customer Sample: 98
Sample Description: Test Well #9
Date Collected: 4/11/90
Time Collected: 12:35
Date Received: 4/12/90
Data Release Authorized:

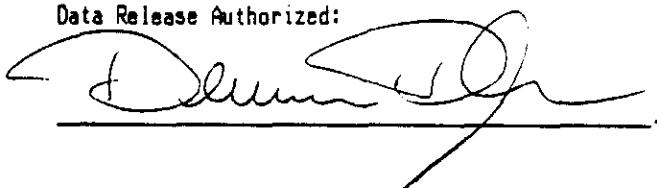


C.A.S. Number	ug/L
112-40-3 n-Dodecane	10 U
126-73-8 Tributyl Phosphate	15

SEMI VOLATILE
ORGANICS ANALYSIS DATA SHEET

Laboratory Name: Pacific Northwest Environmental Lab.
Project Number: 63-900310-109
Sample Matrix: Water
Concentration: Low Dilution Factor: 1
Sample wt/vol: 500 mL
Date Extracted: 4/17/90
Date Analyzed: 4/25/90

Lab Sample: 2372-17MSD
Customer Sample: 9B
Sample Description: Test Well #9
Date Collected: 4/11/90
Time Collected: 12:35
Date Received: 4/12/90
Data Release Authorized:



C.A.S. Number	ug/L
112-40-3 n-Dodecane	10 U
126-73-8 Tributyl Phosphate	16

PNELI

CHAIN-OF-CUSTODY / REQUEST FOR ANALYSIS

Control No.

Client Name Advanced Nuclear FuelsLaboratory Contact Susan Winter

Client Number _____

Send Lab Report To Steve LakhaverBill To Advanced nuclear FuelsAdvanced nuclear Fuels3101 Hanford Rapids Rd.3101 Hanford Rapids Rd. Richland, WA 99352Richland, WA 99352

Date Report Required _____

PO No. R- 24530Client Contact Steve Lakhaver

Carrier No. _____

Client Contact Phone (509) 375-8228

2372

Analysis and Container

Sample Number	Sample Location and Description	Date Collected	Time Collected	Sample Matrix	Number of Containers	Comments
1A	Trst well # 1	21-11-90	12:46	water	2	✓
1B	" # 1	"	12:57	water	2	✓
2A	" # 2	"	13:08	water	2	✓
2B	" # 2	"	13:21	water	2	✓
9A	" # 9	"	12:39	water	2	✓
13A	" # 13	"	13:42	water	3	✓
14A	" # 14	"	11:55	water	2	✓
15A	" # 15	"	12:05	water	2	✓
16A	" # 16	"	12:18	water	2	✓

Special Instructions _____

Possible Sample Hazards: NoneWas Preservative Used? No Yes

What Kind? _____

What Analysis? _____

1. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____

2. Relinquished By Airborne Date 04/12/90 Time 1000 Received By Phil Lakhaver Date 04/12/90 Time 1000

3. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____

4. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____

PNELI

CHAIN-OF-CUSTODY / REQUEST FOR ANALYSIS

Control No.

Client Name Advanced Nuclear Fuels

Client Number

BIII TO Advanced Nuclear Fuels
3101 Hanford Rapids Rd.
Richland, WA 99352

PONo. R-24530

Carrier No. _____

PNEL 2372

Laboratory Contact Susan Winter

Send Lab Report To Steve Lockhaven

Advanced Nuclear Fuels

8101 Horn Rapids Rd. Richmond, VA 23152

Date Report Required _____

Client Contact Steve Lockhaven

Client Contact Phone (509) 325-8238

Analysis and Container					
OA - G24					
Comments					
				broken vial lid in 1 of 2.	
				Small air bubble in lot 2	
				↓	
				Sample A	
				↓	
				$\frac{1}{4}$ " air bubble in 1	
				Small air bubble in 1	

Special Instructions: _____

Was Preservative Used? No Yes What Kind? _____

1. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____

2. Relinquished By Airborne Date 21/12/90 Time 1200 Received By W.D. Bentley - AMB Date 01/12/90 Time 1000

3. Relinquished By _____ Date _____ Time _____ Received By _____ Date _____ Time _____

4. Relinquished By: _____ **Date:** _____ **Time:** _____ **Received By:** _____ **Date:** _____ **Time:** _____

